

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Jin et al
Appl. No.: 09/178,249
Filed: October 23, 1998
Title: Integrated Circuit Dielectric ...

Art Unit: 2825
Examiner: Lee

Docket: TI-26111

12/ Appeal
Bueb
1/4/02
A. Waller

APPELLANTS' BRIEF (in triplicate)

Assistant Commissioner
for Patents
Washington, DC 20231

Dear Sir:

The attached sheets contain the Rule 192(c) items of appellants' brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668; two additional copies of this first sheet of appellants' brief are enclosed.

Respectfully submitted,



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Rule 192(c)(1) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 192(c)(2) Related appeals and interferences

There are no dispositive related appeals or interferences.

Rule 192(c)(3) Status of claims

Claims 1-7 are pending in the application with claims 3-4 and 7 objected to and claims 1-2 and 5-6 finally rejected. This appeal involves all finally rejected claims.

Rule 192(c)(4) Status of amendments

There is no amendment after final rejection.

Rule 192(c)(5) Summary of the invention

The invention provides a method of dielectric layer fabrication which includes flowing a catalyst such as ammonia over precursors for a dielectric material such as porous silicon dioxide. Figs. 1h-1j and application page 6, paragraph (8) describes the catalysis. Such a dielectric layer could be used as integrated circuit interlevel dielectric layers.

Rule 192(c)(6) Issues

The issues presented on appeal are:

(1) whether claims 1-2 and 6 are anticipated by the Smith reference.

(2) whether claim 5 is are patentable over the Smith and Radhakrishnan references.

Rule 192(c)(7) Grouping of the claims

The claims are treated as single group in each rejection.

Rule 192(c)(8) Argument

(1) Claims 1-2 and 6 were rejected as anticipated by Smith. The Examiner cited Smith column 31, lines 5-10 for vapor catalyst flowing over the dielectric layer.

Appellants reply that Smith column 31, lines 5-10 do not suggest flowing the vapor catalyst. Indeed, Smith uses closed chambers (see Figs.16A-19C) and likely would add a vapor catalyst as noted in column 31, lines 5-10 by using a chamber as illustrated in Fig.19C and described in column 27, lines 53-64. This is not the flowing of a catalyst over the precursor layer as required by claim 1, but rather Smith is just adding a vapor catalyst to a closed chamber. Consequently, Smith does not anticipate independent claim 1

(2) Claim 5 was rejected as unpatentable over Smith in view of Radhakrishnan. The Examiner cited Smith as in the foregoing rejection and added Radhakrishnan for a radial flow system.

Appellants repeat the foregoing argument (1) regarding Smith and independent claim 1 plus reply that Radhakrishnan is a gas-phase deposition system and does not suggest a catalyst as required by dependent claim 5. Further, the Radhakrishnan Fig.1 chamber 14 has precursor injection at the middle and does not suggest the claim 5 radial catalyst flow from periphery to central exhaust.

Consequently, the claims are patentable over the references.

Rul 192(c)(9) Appendix

1. A dielectric layer fabrication method, comprising the steps of:
 - (a) applying a layer of dielectric precursor on a body;
 - (b) flowing a precursor reaction catalyst over said layer; and
 - (c) completing a precursor reaction to form a dielectric layer.
2. The method of claim 1, wherein:
 - (a) said catalyst of step (b) of claim 1 includes ammonia.
5. The method of claim 1, wherein:
 - (a) said body of step (a) of claim 1 is within a circular cylindrical chamber; and
 - (b) said flowing of step (b) of claim 1 is into said chamber at the circular periphery of said chamber, is radial over said precursor layer to a central axis, and is out of said chamber at said central axis.
6. The method of claim 1, wherein:
 - (a) said precursor of step (a) of claim 1 includes oligomers polymerized from silicon alkoxides.

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